What is claimed is:

1. A method for producing pulp from lignocellulose fiber-containing feed material comprising the steps of:

first conditioning said fiber containing feed material at an elevated temperature and pressure to produce a conditioned feed material;

subsequently compressing said material to cause separation of said fibers; and

finally refining said feed material to form a lignocellulose pulp.

2. The method as claimed in claim 1, wherein said conditioning of said feed material is performed at a temperature in the range of 90 - 150°C, a pressure in the range of 10 - 100 psi and compression in the range of from 4:1 to 8:1 of the non-compressed volume of said conditioned feed material, wherein compressing said material is accomplished in a screw compression device.

3. The method as claimed in claim 2, wherein said lignocellulose fiber-containing material is refined into pulp by a thermomechanical process.

4. The method as claimed in claim 2, wherein said lignocellulose fiber-containing material is refined into pulp by a chemical digestion

process.

5. The method as claimed in claim 2, wherein said lignocellulose fiber-containing material is refined into pulp by a low-resident time, high-temperature, high-speed process.

6. The method as claimed in claim 2, wherein said lignocellulose fiber-containing material is refined into pulp by a kraft pulp process.

7. The method as claimed in claim 2, wherein said conditioning of said feed material is performed for a period of time in the range of 3 - 180 seconds.

8. The method as claimed in claim 2, wherein:

conditioning said fiber containing feed material occurs optionally under conditions of moisture.

9. The method as claimed in claim 8, wherein said lignocellulose fiber-containing material is refined into pulp by a thermomechanical process.

10. The method as claimed in claim 8, wherein said lignocellulose fiber-containing material is refined into pulp by a chemical digestion process.

11. The method as claimed in claim 8, wherein said lignocellulose fiber-containing material is refined into pulp by a low-resident time, high-temperature, high-speed process.

12. The method as claimed in claim 8, wherein said lignocellulose fiber-containing material is refined into pulp by a kraft pulp process.

13. The method as claimed in claim 8, wherein said conditioning of said feed material is performed for a period of time in the range of 3 - 180 seconds.

14. The method as claimed in claim 8, wherein the source of said moisture is steam.

15. An apparatus for conditioning lignocellulose-containing feed material for refining to pulp, comprising a chamber for conditioning said feed material, wherein said chamber comprises a feed material inlet end and an outlet end; and a compression device for exciting sufficient forces of compression on said feed material to cause destructuring of said feed material.

16. An apparatus as claimed in claim 15, wherein said compression device comprises:

a housing having an inlet end and an outlet end, and a shaft

rotatably mounted within said housing, wherein said shaft has one or more screw impeller flights helically disposed thereabout for impelling said feed material from said inlet end of said compression device and for exerting compression in the range of from 4:1 - 8:1 on said material.

17. An apparatus as claimed in claim 16, wherein said housing is in spaced-apart relationship to said shaft, said spaced-apart relationship defining a volume space around said shaft which is characterized as having a volume space in the region of said inlet end of said housing which is larger relative to the volume space around said shaft toward the outlet end of said housing,

wherein compression of said feed material is accomplished by impelling said material from said area of larger volume space at said inlet end into the area of lesser volume space toward said outlet end of said housing.

18. An apparatus as claimed in claim 17, wherein said compression zone further comprises one or more high compression projections extending into the volume space about said shaft, thereby further reducing the volume space and increasing compression.

19. An apparatus as claimed in claim 42, wherein the compressive forces exerted on the feed material are in the range of compression ratios of 4:1- 8:1.

20. An apparatus as claimed in claim 16, wherein said conditioning chamber is adapted for providing conditions for conditioning of said feed material including providing a temperature in the range of 90 - 150°C, pressure in the range of 10 - 100 psi and, optionally, moisture.

21. An apparatus as claimed in claim 16, wherein said apparatus is combined with an RTS pulp refiner for producing lignocellulose pulp.

22. An apparatus as claimed in claim 16, wherein said apparatus is combined with a chemical digester for producing lignocellulose pulp.

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